WHAT IS CLAIMED IS:

1. A decoding power aware encoding method for generating a predictively encoded data stream, in which predictions, that result in a reduction in the amount of data transferred from the secondary memory to primary memory during the decoding process, are favored, said method for favoring certain predictions comprising:

(a) a model for transfer of data from secondary memory to primary memory in the decoding process;

(b) a scheme for weighting the relative merits of favoring a certain prediction and the associated loss in compression gain, and

(c) based on said weighting scheme, choosing a particular prediction from the candidates allowed by the compression scheme.

2. A power aware decompression method for decoding a predictively encoded data stream, comprising:

(a) generating a first selection signal which signals whether the data to be used for prediction resides in primary memory in part or in whole;

(b) if the first selection signal indicates that a portion of the said prediction data or the whole of the said prediction data is not present in primary memory:

i. generating a second selection signal, based on an estimate of the future needs of the prediction process, to signal that portion of the primary memory where the prediction data, which is not

already present in primary memory, should reside, and

ii. transferring said prediction data that is not already present in primary memory, from secondary memory to that portion of the primary memory indicated by the second selection signal, and

(c) generating a prediction signal to be used in the process of decompression by manipulating data residing in primary memory.

3. A method for decoding a coded data stream comprising:

(a) processing the coded data stream to produce outputted decoded data frames;

(b) transmitting signals to and receiving signals from an external memory for storage and retrieval of previously decoded reference data frames, and

(c) transmitting signals to and receiving signals from a primary memory for storage and retrieval of data frames being decoded currently..

4. A system for decoding a coded data stream comprising:

(a) a processor for outputting the decoded data frames;

(b) an external memory;

(c) an internal primary memory having high speed access relative to the external memory's speed, and

(d) a memory management scheme for decreasing the amount of traffic to the external memory so as to provide better real-time performance and power saving by a connection arrangement for transmission from the processor to the external and internal memories.

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5. A system as defined in claim 4, wherein said internal primary memory is dedicated to the motion compensation function of data decoding.

10   6. A system as defined in claim 4, wherein the processor receives the data stream at its input, and has output respectively connected to the external and internal memories and a further output providing decoded data frames.

7. A system for decoding a coded data stream comprising:

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(a) a processor for outputting decoded data frames;

(b) motion compensation means having a memory for storing a reference data frame as well as a data frame being decoded currently;

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(c) an external memory;

(d) an internal primary memory having high speed access relative to the external memory, and

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(e) wherein said internal primary memory is dedicated to the motion compensation function of decoding.

8. A system for encoding an input data frame comprising:

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(a) a motion estimator for receiving an input frame and for searching to find the best match between an input frame and an area in a reference frame;

(b) a primary memory model coupled to the motion estimator;

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(c) a motion vector selector coupled to the output of the motion estimator;

(d) a memory for storing data reference frames, and

10 (e) a quality and rate controller coupled to the motion vector selector.

9. A system for encoding a data frame as defined in claim 8 further comprising a motion vectors module for determining the motion vectors based on the current block and the best matched candidate.

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10. A program memory medium for controlling a system that decodes a coded data stream, the memory medium comprising:

(a) controlling the processing of a coded data stream to produce outpoutted

20 data frames;

(b) controlling the transmitting of signals to, and receiving signals from, a high speed primary memory for storage and retrieval of data frames being decoded currently;

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(c) controlling the transmitting of signals to, and receiving signals from, a secondary memory, and

(d) controlling the amount of traffic to the external memory.